

PART 4

IMPACT EVALUATION

This Part discusses general impacts common to all alternatives and the potential impacts of each project action alternative on the Federally listed endangered and threatened species, species proposed for listing and candidate species potentially occurring in the project area. When the impacts of alternatives are similar it is noted. Additionally, impacts to each species occurring in Minnesota and South Dakota along only the rebuild portion of the proposed construction would not be differently affected by Alternatives B, C, or D, therefore; impacts for each individual alternative are not listed. Species impacts are not addressed for alternatives if impacts to the species are not anticipated.

Project activities which may cause short-term impacts if species or habitat is present include direct mortality by field vehicles and construction machinery, avoidance of habitats and/or temporary habitat loss near construction sites and potential short-term degradation of habitats.

Project activities that may cause long-term impacts, if species or their habitats are present, are similar to the short-term impacts listed above. Long-term impacts include direct mortality by trains and maintenance vehicles, avoidance of habitats that are near the tracks, and potential long-term deterioration of habitats. Aquatic habitats could be affected where there was sediment discharge or accidental release of toxic substances (fuels or oil). Additionally, long-term herbicide use could degrade habitats. To mitigate these potential impacts DM&E would employ measures to minimize and control the sediment discharge. Additionally, the chance of spills during construction and operation of the rail line would be minimal because fuel would be stored away from waterways and a contingency plan would be in place.

Potential indirect long-term impacts to ground nesting birds could also occur if predators are drawn to a nesting area because of carrion concentrations along tracks. Long-term impacts to habitats used by terrestrial and aquatic species due to surface disturbances are also expected to be similar to those described under short-term impacts. However, once construction machinery is withdrawn from the right-of-way and revegetation is successful, the total amount of some habitats affected by surface disturbance are expected to be reduced over the long-term.

Noise due to train traffic is expected to be a long-term impact to some species. The degree to which anticipated noise levels displace species is unknown and undoubtedly varies by species and local conditions. Abandonment of occupied habitats within some distance of the railroad is likely, particularly by nesting birds.

Long-term runoff of sediments could impact aquatic organisms downstream in much the same way as described under short-term impacts.

4.1 BLACK-FOOTED FERRET

4.1.1 Minnesota

This species does not occur in Minnesota; therefore, there would be no impacts.

4.1.2 South Dakota and Wyoming

Black-footed ferrets have been reintroduced to the Conata Basin/Badlands in South Dakota as a nonessential experimental population. Similarly, black-footed ferrets are being considered for reintroduction to TBNG in Wyoming. There are approximately 15,000 acres of a prairie dog complex within the potential reintroduction area, known as the Rosecrans Site (Byer and Luce no date), but only 5,502 acres of that complex on TBNG have been managed to exclude poisoning with rodenticides and

recreational shooting (Byer and Luce no date). Elsewhere on TBNG prairie dogs continue to be subject to recreational shooting although control through poisoning has been temporarily halted on Forest Service lands.

As potential habitat for black-footed ferrets, black-tailed prairie dog colonies occur throughout the project area in South Dakota and Wyoming. Locations of prairie dog colonies coinciding with each alternative were obtained from diverse sources (Table 3-7) and some of those were mapped by WGFD during the late 1980's and are not current. The extent of potential black-footed ferret habitat with relatively high habitat function and value (active prairie dog colonies within large complexes not threatened by sylvatic plague, poisoning or recreational shooting) that would be affected by any alternative is unknown.

4.1.2.1 Alternative B (Proposed Action)

4.1.2.1.1 Construction Impacts

The only documented evidence of black-footed ferrets are a 1983 confirmed (Jobman and Anderson, 1991) sighting in the vicinity of Edgemont, South Dakota; a ferret skull found in Converse County, Wyoming in 1979; 2 confirmed sightings (1974 and 1981) in Campbell County and 1 confirmed sighting from Niobrara County (all within 16 miles of proposed route alternatives).

Alternative B would cross 4.9 miles of the proposed black-footed ferret reintroduction site, the Rosecrans Reintroduction Area, on TBNG. Construction impacts and long-term operational impacts to this area would likely make it unsuitable for reintroduction of the species.

4.1.2.1.2 Operational Impacts

If black-footed ferrets are found in the proposed project areas impacts could include deaths caused by train and increased vehicle traffic, fragmentation of habitat (prairie dog colonies), increased predator presence, spread of disease by predators and increased shooting of prairie dogs (Case 1978, Bennett 1991). Recreational shooting can reduce local prairie dog populations by 35 to 69 percent (Knowles 1988; Vosburgh and Irby 1998). Additionally, ferret mortality can occur by ingesting dead prairie dogs killed with rodenticides (Hillman 1968).

County weed and pest control agents provided locations of scattered prairie dog colonies along Alternatives B and C within all counties in South Dakota and Wyoming and indicated many have been treated by them or by landowners with poisoned grain during the past decade. Typically, prairie dog populations can recover from shooting in one year (B. Perry personal communication with PIC Technologies, Inc. 1999); while recovery following cessation of poisoning can take one to two years (Knowles 1986; Cincotta et al. 1987; Apa et al. 1990). Recovery of populations following plague, however, occurs much slower and some populations may never recover to pre-epizootic levels (Mulhern and Knowles 1995). Sylvatic plague is fatal to black-footed ferrets (Williams et al. 1994). Table 3-7 lists the miles of short- and long-term disturbances of prairie dog habitat.

4.1.2.2 Alternative C (Modified Proposed Action)

4.1.2.2.1 Construction Impacts

Construction of Alternative C would have similar impacts as Alternative B. The possibility that black-footed ferrets exist in the proposed project area is remote; however, if an extant population exists deaths could result from vehicles during construction.

4.1.2.2.2 Operational Impacts

Operational impacts include black-footed ferret deaths caused by train and increased vehicle traffic, fragmentation of habitat (prairie dog colonies), increased recreational shooting of prairie dogs, spread of disease and an increase in predators. Table 3-7 lists the miles of short- and long-term disturbances of prairie dog habitat.

4.1.2.3 Alternative C with the Phiney Flat Variation

Impacts for this alternative would be similar to Alternatives B and C.

4.1.2.4 Alternative C with the W G Flat Variation

Impacts for this alternative would be similar to Alternatives B and C.

4.1.2.5 Alternative D (Existing Transportation Corridors)**4.1.2.5.1 Construction Impacts**

Construction of Alternative D would have similar impacts as Alternatives B and C. If an extant population exists deaths could result from vehicles during construction.

4.1.2.5.2 Operational Impacts

Black-footed ferrets could be impacted by increased vehicular and train traffic, fragmentation of prairie dog colonies, increased recreational shooting and the spread of disease by an increase in predators. Table 3-7 lists the miles of short- and long-term disturbances of prairie dog habitat.

4.2 PIPING PLOVER**4.2.1 Minneosta**

This species does not occur in Minnesota; therefore, there would be no impacts.

4.2.2 South Dakota and Wyoming**4.2.2.1 Alternative B (Proposed Action)****4.2.2.1.1 Construction Impacts**

Noise disturbance due to construction could affect nesting piping plovers, although most reports of plovers vacating nests have focused on humans approaching nests on foot rather than noise levels and vehicular frequencies associated with railroads or highways (Dinsmore 1983). Depending on where the work camps are located and the level of human activity in the project area more piping plovers may be affected.

Spills of petroleum products such as diesel fuels or lube oils during construction of the proposed project could affect aquatic invertebrates which piping plovers rely on for their food source. However, DM&E would store these substances (fuels and oil) away from drainages and a Spill Prevention Control and Countermeasure (SPCC) plan would be in place.

The presence of selenium and other trace elements in soils within the project area is unknown. If present in similar concentrations to those found in marine shales along the Missouri River (4.79-13.60 mg/kg dry weight) increased selenium loads in the Cheyenne River could occur following erosion and runoff from construction sites (Ruelle 1993). However, this is unlikely since DM&E would employ erosion and sedimentation control measures during construction activities to minimize impacts on water resources.

Bioaccumulation of selenium and possibly other trace elements could adversely affect piping plovers known to nest on the Cheyenne River downstream. Also, construction adjacent to the river may require riprap or more substantial structures to stabilize the riverbank that in turn could change river flow dynamics. Change in river flow could alter existing deposition and erosion regimes that created local mud, sand, or gravel bars that provide suitable nesting habitats. However, these areas could be lost and others created. Habitats currently overgrown could be scoured, making them again suitable for nesting. Many of the piping plovers found in the proposed project area have adapted to nesting at sandpits, which would be unaffected by changes in river flows.

Construction of Alternative B during spring and early summer along the corridor of the Cheyenne River could displace piping plovers from sandbars or islands within the river. However, water flows in the Cheyenne River during some years would inundate or scour sandbars and islands, making them unsuitable for nesting. If that were the case during construction, there would be no short-term impacts to piping plovers. In years with low water flows, construction activities prior to nesting may cause them to avoid the area. Since piping plovers appear to tolerate distant noise associated with highways and railroads, they may nest anyway, resulting in minimal impacts.

4.2.2.1.2 Operational Impacts

Long-term impacts to piping plovers may include noise and nest disturbance from increased human activity. Selenium concentrations in subbituminous coal from the Powder River Basin (0.73 ppm) are far below concentrations found in bituminous coals of the mid-west and Appalachian basins (range of 2.5 to 5.7 ppm) (Ensminger 1977). Thus, elevated selenium levels due to coal dust entering water or soils is unlikely.

Spills of petroleum products such as diesel fuels or lube oils during construction of the proposed project could affect aquatic invertebrates which piping plovers rely on for their food source. However, DM&E would store these substances (fuels and oil) away from drainages and a Spill Prevention Control and Countermeasure (SPCC) plan would be in place in case of spills.

4.2.2.2 Alternative C (Modified Proposed Action)

4.2.2.2.1 Construction Impacts

Construction of this alternative would have similar impacts as Alternative B. Nesting piping plovers could be disturbed by construction noise. Spills of petroleum products could affect aquatic invertebrates. However, DM&E would have SPCC plans in place in case of spills and would store toxic (fuels and oil) substances away from drainages.

DM&E would employ erosion and sedimentation control measures during construction activities to minimize impacts on water resources.

Bioaccumulation of selenium and possibly other trace elements could adversely affect piping plovers known to nest on the Cheyenne River downstream as well as potential nests within the project area. Construction occurring adjacent to the river may require riprap or other structures for stabilization that in turn could change the flow of the river.

Construction during spring and early summer along the Cheyenne River corridor could displace piping plovers if they select sandbars or islands within the river to nest. However, high water flows in the Cheyenne River during some years would destroy any potential nesting habitats. If that were the case during construction, there would be no short-term impacts to piping plovers.

4.2.2.2.2 Operational Impacts

Carrion along the track may result in an increase in predators that may lead to relatively high nest predation for nests in the vicinity of the rail line compared to those further removed (Reeve 1990, Hein & Andelt 1996). Additional impacts include noise and nest disturbance from increased human activity. Significant amounts of coal dust entering water or soils is unlikely.

4.2.2.3 Alternative C with the Phiney Flat Variation

Impacts for this alternative would be similar to Alternatives B and C.

4.2.2.4 Alternative C with the W G Flat Variation

Impacts for this alternative would be similar to Alternatives B and C.

4.2.2.5 Alternative D (Existing Transportation Corridors)

4.2.2.5.1 Construction Impacts

Nesting piping plovers could be disturbed by construction noise, although this alternative would have fewer impacts to nesting piping plovers than Alternatives B and C since it only crosses the Cheyenne River once. Spills of petroleum products during construction could affect aquatic invertebrates which piping plovers rely on for their food source. Since the alternative crosses the river only once, the opportunity for the possibility of a spill occurring is even more unlikely than for the other alternatives. However, DM&E has SPCC plans in place in case of spills and would store toxic (fuels and oil) substances away from drainages to reduce the potential for release into a waterway.

DM&E would employ erosion and sedimentation control measures during construction activities to minimize impacts on water resources due to possible selenium accumulation.

Construction of Alternative D during spring and early summer along the Cheyenne River corridor could displace the birds. However, Alternative D would cross the Cheyenne River only once, between the confluence of Spring Creek and Wasta, and would only affect nesting areas in proximity to this crossing. Due to this limited opportunity to affect potential nesting areas, Alternative D would not be expected to impact piping plovers.

4.2.2.5.2 Operational Impacts

The impact to piping plovers from nest predation would be less for this alternative than for Alternatives B and C. Elevated selenium levels due to coal dust entering water or soils is unlikely.

4.3 WHOOPING CRANE

4.3.1 Minnesota

This species does not occur in Minnesota; therefore, there would be no impacts.

4.3.2 South Dakota and Wyoming

No impacts to whooping cranes are anticipated since the only documentation of their occurrence within the proposed project area is infrequently during migrations.

4.4 INTERIOR LEAST TERN

4.4.1 Minnesota

Interior least terns are known to nest along the Missouri River and have been observed near DM&E's bridge crossing at Pierre, South Dakota and downstream at the Farm Island Recreation Area (SDNHDB 1998). In this area, approximately 4.8 miles of the existing railroad is within 500 feet of the Missouri River.

4.4.1.1 Construction Impacts

Nesting interior least terns appear tolerant of vehicular and railroad traffic, but abandon nests and colonies if directly disturbed by pedestrians, off-road vehicles, pets and livestock (Carreker 1985), or recreational activities (Kruse et al. 1993, Mayer 1993). Increased human activity during construction may impact nesting interior least terns.

Spills of petroleum products could affect fish which interior least terns rely on for their food source. However, DM&E would have SPCC plans in place in case of spills and would store toxic (fuels and oil) substances away from drainages.

Traditionally, wood treated with creosote used to inhibit wood-destroying fungi, has been the principal material for rail ties and bridge construction where small drainages were crossed. Coal tar creosote is

heavier than water and practically insoluble (Budavari et al. 1989). Phenols, which may be components of creosote, are highly toxic by ingestion, inhalation or skin absorption (Talmage 1977). Contamination of local water sources could occur if railroad ties or other similar products are stored near waterways which in turn could impact invertebrates that the birds feed upon.

4.4.1.2 Operational Impacts

There could be an increase in carrion along the track, which could draw more predators to the area. Ground nesting birds are extremely susceptible to predation.

4.4.2 South Dakota and Wyoming

4.4.2.1 Alternative B (Proposed Action)

4.4.2.1.1 Construction Impacts

Construction impacts are similar to those listed under Section 4.2.2.1.1 for the piping plover. Increased human activity during construction could impact nesting interior least terns. If selenium occurs in the soils, increased sediment loads in the Cheyenne River could occur following erosion and runoff from construction sites increasing selenium concentrations. However, this is unlikely since DM&E would employ erosion and sedimentation control measures during construction activities. Bioaccumulation of selenium could impact interior least terns known to nest downstream of erosion sites. Construction occurring adjacent to the river may require riprap or other structures for stabilization that in turn could change the flow of the river. Change in river flow could alter existing deposition and erosion regimes that created local mud, sand, or gravel bars that provide suitable nesting habitats. However, these areas could be lost and others created. Habitats currently overgrown could be scoured, making them again suitable for nesting.

Contamination of local water sources could occur if railroad ties or other similar products are stored near waterways and runoff from these storage areas is not properly contained.

Spills of petroleum products could contaminate adjacent waters. However, DM&E would have SPCC plans in place in case of spills and would store fuels and oil away from drainages.

Construction of this alternative during spring and early summer along the Cheyenne River corridor could displace interior least terns if they select sandbars or islands within the river to nest.

4.4.2.1.2 Operational Impacts

Operational impacts are similar to those listed for piping plovers under Section 4.2.2.1.2. An increase in predators may result from the increase in carrion along the track. Ground nesting birds, such as interior least terns, are extremely susceptible to nest predation.

Elevated selenium levels due to coal dust entering water or soils is unlikely since selenium concentrations in subbituminous coal from the Powder River Basin (0.73 ppm) are far below concentrations found in bituminous coals of the mid-west and Appalachian basins (range of 2.5 to 5.7 ppm) (Ensminger 1977). Thus, elevated selenium levels due to coal dust contamination of water or soils is unlikely.

4.4.2.2 Alternative C (Modified Proposed Action)

4.4.2.2.1 Construction Impacts

Construction impacts are similar to those listed under Alternative B. Increased human activity during construction may impact nesting interior least terns. Birds are known to abandon nests and colonies if directly disturbed by pedestrians, off-road vehicles and pets (Kruse et al. 1993, Mayer 1993).

DM&E would employ erosion and sedimentation control measures during construction activities to avoid possible increased loads of selenium in the Cheyenne River. Bioaccumulation of selenium and possibly

other trace elements could adversely affect interior least terns known to nest on the Cheyenne River downstream as well as potential nests within the project area. Therefore, construction adjacent to the river may require riprap or more substantial structures to stabilize the riverbank that could change river flow dynamics. The change in river flow could alter existing deposition and erosion regimes that created local mud, sand, or gravel bars that might serve as suitable nesting habitats. However, many of the piping plovers found in the proposed project area have adapted to nesting at sandpits which would be unaffected by changes in river flows.

There is a remote possibility of spills of petroleum products occurring that could affect fish that interior least terns eat. However, DM&E would have SPCC plans in place in case of spills and would store toxic (fuels and oil) substances away from drainages.

Interior least terns could be displaced during construction along the Cheyenne River.

4.4.2.2.2 Operational Impacts

Once the rail line is operational there could be an increase in predators that could impact interior least terns.

Selenium concentrations in subbituminous coal from the Powder River Basin (0.73 ppm) are far below concentrations found in bituminous coals of the mid-west and Appalachian basins (range of 2.5 to 5.7 ppm) (Ensminger 1977). Thus, elevated selenium levels due to coal dust entering water or soils is unlikely.

4.4.2.3 Alternative C with the Phiney Flat Variation

Impacts for this alternative would be similar to Alternatives B and C.

4.4.2.4 Alternative C with the W G Flat Variation

Impacts for this alternative would be similar to Alternatives B and C.

4.4.2.5 Alternative D (Existing Transportation Corridors)

4.4.2.5.1 Construction Impacts

Construction impacts are similar to those listed under section 4.2.2.1.1 for the piping plover. Increased human activity during construction may impact nesting interior least terns.

If selenium occurs in the soils, increased loads in the Cheyenne River could occur following erosion and runoff from construction sites. However, this is unlikely since DM&E would employ erosion and sedimentation control measures during construction activities. Additionally, this alternative crosses the Cheyenne River only once therefore there should be fewer impacts due to construction along the river.

Spills of petroleum products could affect fish which interior least terns rely on for their food source. However, DM&E would have SPCC plans in place in case of spills and would store toxic (fuels and oil) substances away from drainages.

Interior least terns could be displaced during construction. However, Alternative D would cross the Cheyenne River once, between the confluence of Spring Creek and Wasta and be within 0.5 mile of the river for only 8 miles in Pennington County, approximately half the distance of any other alternative.

4.4.2.5.2 Operational Impacts

Once the rail line is operational there may be an increase in predators. Local concentrations of predators could impact ground-nesting birds (Baker et al. 1999), including interior least terns that are in close proximity to the rail line.

Selenium concentrations in subbituminous coal from the Powder River Basin (0.73 ppm) are far below concentrations found in bituminous coals of the mid-west and Appalachian basins (range of 2.5 to 5.7 ppm) (Ensminger 1977). Thus, elevated selenium levels due to coal dust entering water or soils is unlikely.

4.5 TOPEKA SHINER

4.5.1 Minnesota

The existing railroad crosses streams known to be or potentially inhabited by Topeka shiners at 12 sites in Minnesota (Table 4-1). The railroad is within 500 feet of those streams for approximately 5.2 miles. Those crossing sites and areas within 500 feet of streams are most likely to be at risk of increased sedimentation during construction and operation. Sedimentation could adversely affect water and substrate quality since Topeka shiners inhabit cool, low order prairie streams with good water quality and mostly with silt-free substrates of gravel, cobble, and sand.

4.5.1.1 Construction Impacts

Topeka shiners downstream from the project area could be adversely affected if petroleum products were accidentally discharged into aquatic environments. Such materials are toxic to algae, invertebrates, and fish. However, DM&E would have SPCC plans in place in case of spills and would store these substances away from drainages. Short-term impacts could occur during construction with increased sedimentation due to runoff from cut-and-fill activities, placement of bridges and culverts in drainages, and erosion from the disturbed construction right-of-way.

4.5.1.2 Operational Impacts

During operation, short- or long-term impacts could occur downstream if there were derailments and accidental releases of diesel fuels and other petroleum products. However, this is unlikely because of increased safety of the rail line. Impacts would be most likely if derailments or accidental releases are within 500 feet of surface waters where there may be insufficient riparian vegetation to prevent flows from entering drainages.

4.5.2 South Dakota and Wyoming

The existing railroad crosses streams known to be or potentially inhabited by Topeka shiners at 41 sites in South Dakota (Table 4-1). The railroad is within 500 feet of those streams for approximately 13.2 miles. Those crossing sites and areas within 500 feet of streams are most likely to be at risk of increased sedimentation during construction and operation. Sedimentation could adversely affect water and substrate quality since Topeka shiners inhabit cool, low order prairie streams with good water quality and mostly with silt-free substrates of gravel, cobble, and sand.

4.5.2.1 Construction Impacts

Construction impacts would be similar to those listed for Minnesota.

4.5.2.2 Operational Impacts

Operational impacts would be similar to those listed for Minnesota.

Table 4-1 Topeka Shiner Streams by DM&E's Existing Rail Line			
State	County	Existing Railroad Crossings and Paralleling Streams inhabited by Topeka Shiners	
		Number of Stream Crossings	Distance of ROW within 500 feet of Streams (miles)
Minnesota	Lincoln	12	5.2
South Dakota	Brookings	24	8.6
	Kingsbury	5	1.5
	Beadle	8	2.2
	Hand	4	0.9
Total:		53	18.4

4.6 PALLID STURGEON

4.6.1 Minnesota

This species does not occur in Minnesota; therefore, there would be no impacts.

4.6.2 South Dakota and Wyoming

From 1967 to 1989 there have been records of pallid sturgeon in the Missouri River between DM&E's existing bridge crossing at Pierre, South Dakota downstream to the Medicine Knoll Creek confluence and where the existing railroad parallels the Missouri River. In this portion of the existing railroad, there are approximately 4.8 miles where the tracks are within 500 feet of the Missouri River.

Rebuilding the existing railroad is not likely to contribute to further degradation of riverine habitats inhabited by pallid sturgeons. Sturgeons are adapted to turbid waters, possibly depending on turbidity as cover from predators and feeding on fish species likewise adapted to turbid water. Consequently, any increases in sedimentation in the Missouri River due to construction and operation of the rebuild project, such as rehabilitation of the existing or construction of a new rail bridge over the river, is not likely to pose a hazard to pallid sturgeon in the river. Pallid sturgeon inhabiting the Missouri River in the project area or downstream could be adversely affected if petroleum products were accidentally discharged into aquatic environments.

4.6.2.1 Alternatives

Since suitable habitat does not exist in the vicinity of the alternatives paralleling the Cheyenne River there would be no impacts.

4.7 AMERICAN BURYING BEETLE

4.7.1 Minnesota

This species does not occur in Minnesota; therefore, there would be no impacts.

4.7.2 South Dakota and Wyoming

Potentially suitable habitat is crossed by the existing railroad from Brookings County in eastern South Dakota to Pennington County, South Dakota in the west and includes cropland, pastures, grassland (herbaceous rangeland) and deciduous forestlands. The American burying beetle may occur wherever suitable habitat is present. Nearly 460 miles of existing railroad cross these land cover types in South Dakota. However, farmed cropland would probably not be suitable habitat due to frequent disturbances and pesticide use. Additionally, the right-of-way would provide only limited habitat for carrion species and American burying beetle's presence within the ROW would be incidental if they even occurred within the project area. Impact projections are impossible because of inadequate information about the beetles' distribution in the vicinity of the existing rail line. Adequate litter could have developed along

DM&E's right-of-way where limited or no maintenance work has occurred. Consequently, there could be adequate litter developed in which beetles could bury carrion.

Estimates of potential habitats affected can be made, based on general habitat and soils types where suitable soils are assumed to include sandy soils (those with high wind erosion potential) and prime farmland soils (those with relatively well-developed topsoils). These soils are considered sensitive to impacts by any of the alternatives. Other soils in the project area that might be inhabited by American burying beetles include those with silt loam, loam and sandy loam textures.

4.7.2.1 Alternative B (Proposed Action)

4.7.2.1.1 Construction Impacts

American burying beetle habitat within the right-of-way may be disturbed or lost during construction and operation of the rail line. More likely are impacts due to construction such as removal and compaction of soils, but only if beetles are present within construction rights-of-way. Once the ballast is laid and the earth compacted in the right-of-way it is unlikely these areas would be suitable habitat for the beetle.

Though not documented in the vicinity of Alternative B in South Dakota, American burying beetles could occur in suitable soils. Suitable soils include those with high sand content (soils with high wind erosion potential) and those with relatively well developed topsoil. Soils in both groups are sensitive to impacts by Alternative B. Given the recent collections of American burying beetles in southern South Dakota in riparian areas, grasslands, and grasslands with interspersed stands of cottonwoods (Backlund and Marrone, 1997), Alternative B could affect similar potentially suitable habitats along the route in South Dakota. Over 3 miles (approximately 73 acres within ROW) of forested (cottonwood riparian) wetlands and 113 miles (approximately 2739 acres within ROW) of herbaceous rangeland would be affected. Also, this alternative would pass through 20.5 miles (approximately 497 acres within ROW) of cropland and pasture that could also serve as suitable habitats.

Potential habitat that may be disturbed by construction of Alternative B is provided in Table 4-7. Construction disturbance would probably contribute short- and long-term impacts to American burying beetles if the beetles are actually present. There are approximately 33 miles (approximately 800 acres within the ROW) in South Dakota where Alternative B would pass through soils and habitats that might be used by American burying beetles for burying carrion and reproduction. The majority of those soils, 26 miles (approximately 630 acres within the ROW), are potentially prime farmland soils but it is unknown whether all or some are irrigated and/or cultivated. It is assumed that irrigation and/or cropland would make a site unsuitable for American burying beetles due to frequent disturbances.

Impacts due to artificial lights, which are known to attract and disorient many species of nocturnal insects, could occur if construction takes place at night.

Table 4-7						
Potential American Burying Beetle Habitat along Alternative B						
County State	Suitable Soil Type	Distance (miles) of potential habitat crossed				County Total
		Cropland Pasture	Herbaceous Rangeland	Forested Wetland	Deciduous Forest	
Pennington SD	Sandy, Erosive	0	0.06	0	0	0.06
	Prime Farmland	0.99	1.36	0	0	2.35
Custer SD	Sandy, Erosive	0	1.12	0.47	0	1.59
	Prime Farmland	1.02	2.86	0.74	0	4.62
Fall River SD	Sandy, Erosive	0.60	5.07	0.26	0	5.93
	Prime Farmland	7.62	10.66	0.53	0	18.81
Alternative B Total:		10.23	21.13	02.00	0	33.36

4.7.2.1.2 Operational Impacts

Impacts due to artificial lights in staging areas could occur. Other operational impacts are expected to be minimal since once the rail line is operational, soils within the right-of-way would be compacted and unsuitable for the American burying beetles.

4.7.2.2 Alternative C (Modified Proposed Action)**4.7.2.2.1 Construction Impacts**

Impacts would be similar to those for Alternative B. Table 4-8 lists potential American burying beetle habitat along Alternative C. There are approximately 35 miles (approximately 849 acres within the ROW) in South Dakota where Alternative C would pass through suitable soils in potential habitats that might be used by American burying beetles, 2 miles more than Alternative B. Nearly 27 miles (approximately 655 acres of the ROW) of Alternative C passes through soils with characteristics of prime farmland, but whether all or some are irrigated and/or cultivated is unknown.

Habitat of the American burying beetle may be disturbed and/or lost. Removal and compaction of soils during construction could also impact the beetles, but only if they are present within construction rights-of-way. Impacts due to artificial lights, which are known to attract and disorient many species of nocturnal insects, could occur if construction takes place at night.

Table 4-8						
Potential American Burying Beetle Habitat along Alternative C						
County State	Suitable Soil Type	Distance (miles) of potential habitat crossed				
		Cropland Pasture	Herbaceous Rangeland	Forested Wetland	Deciduous Forest	County Total
Pennington SD	Sandy, Erosive	0	0.84	0	0.20	1.04
	Prime Farmland	0.99	1.90	0	0	2.89
Custer SD	Sandy, Erosive	0	0	0	0	0
	Prime Farmland	2.95	1.13	0	0	4.08
Fall River SD	Sandy, Erosive	1.28	6.36	0.12	0	7.76
	Prime Farmland	5.79	13.13	0.73	0	19.65
Alternative C Total		11.01	23.36	0.85	0.20	35.42

4.7.2.2.2 Operational Impacts

Operational impacts would be similar to Alternative B.

4.7.2.3 Alternative C with the Phiney Flat Variation**4.7.2.3.1 Construction Impacts**

Impacts for this alternative would be similar to Alternatives B and C. Overall disturbances by this alternative are over 3 miles more than disturbances by Alternative B and about 0.5 mile more than Alternative C. American burying beetles could occur in suitable soils along the Phiney Flat Variation. The amount of disturbances by the Phiney Flat Route Variation in these soils and potentially suitable habitats are provided in Table 4-9.

Table 4-9						
Potential American Burying Beetle Habitat along Alternative C with the Phiney Flat Alternative						
County State	Suitable Soil Type	Distance (miles) of potential habitat crossed				
		Cropland Pasture	Herbaceous Rangeland	Forested Wetland	Deciduous Forest	County Total
Pennington SD	Sandy, Erosive	0	0.84	0	0.46	1.30
	Prime Farmland	0.99	1.90	0	0	2.89
Custer SD	Sandy, Erosive	0	0	0	0	0
	Prime Farmland	4.05	1.37	0	0	5.42

Table 4-9						
Potential American Burying Beetle Habitat along Alternative C with the Phiney Flat Alternative						
County State	Suitable Soil Type	Distance (miles) of potential habitat crossed				
		Cropland Pasture	Herbaceous Rangeland	Forested Wetland	Deciduous Forest	County Total
Fall River SD	Sandy, Erosive	1.28	5.08	0.12	0	6.48
	Prime Farmland	5.79	13.41	0.73	0	19.93
Alternative C with the Phiney Flat Alternative Total:		12.11	22.60	0.85	0.46	36.02

4.7.2.3.2 Operational Impacts

Impacts would be similar to Alternatives B and C.

4.7.2.4 Alternative C with the W G Flat Variation

4.7.2.4.1 Construction Impacts

Impacts for this alternative are similar to Alternatives B and C. American burying beetles could occur in suitable soils and potentially suitable habitats along the W G Flat Variation in South Dakota. Those potentially affected areas are provided in Table 4-10. Overall disturbances by the W G Flat Route Variation to suitable soils and potential habitats used by American burying beetles is over 3 miles more than disturbances by Alternative B, about 1.4 miles more than Alternative C and 0.8 miles more than the Phiney Flat Variation.

Table 4-10						
Potential American Burying Beetle Habitat along Alternative C with the W G Flat Alternative						
County State	Suitable Soil Type	Distance (miles) of potential habitat crossed				
		Cropland Pasture	Herbaceous Rangeland	Forested Wetland	Deciduous Forest	County Total
Pennington SD	Sandy, Erosive	0	0.84	0	0.46	1.30
	Prime Farmland	0.99	1.90	0	0	2.89
Custer SD	Sandy, Erosive	0	0	0	0	0
	Prime Farmland	3.38	1.21	0	0	4.59
Fall River SD	Sandy, Erosive	2.10	6.06	0.12	0	8.28
	Prime Farmland	7.65	11.38	0.73	0	19.76
Alternative C with the W G Flat Alternative Total:		14.12	21.39	0.85	0.46	36.82

4.7.2.4.2 Operational Impacts

Operational impacts for this alternative would be similar to Alternatives B and C.

4.7.2.5 Alternative D (Existing Transportation Corridors)

4.7.2.5.1 Construction Impacts

Construction of this alternative would have similar impacts as Alternatives B and C. However, this alternative passes through more miles of American burying beetle potential habitat. Habitat of the beetle may be disturbed and/or lost. Removal and compaction of soils during construction could also impact the beetles, but only if they are present within construction rights-of-way. Additionally, impacts due to artificial lights, which are known to attract and disorient many species of nocturnal insects, could occur if construction takes place at night and if the beetle is found to occur in the proposed project area.

There are approximately 42 miles (approximately 1018 acres within the ROW) in South Dakota where Alternative D would pass through suitable soils in potential habitats that might be used by American burying beetles, 8 miles more than Alternative B and between 5 and 6 miles more than Alternative C or either of the variations. Over 34 miles (approximately 824 acres within the ROW) of Alternative D

passes through soils with characteristics to be prime farmlands, but whether all or some are irrigated and/or cultivated is unknown (Table 4-11).

Table 4-11						
Potential American Burying Beetle Habitat along Alternative D						
County State	Suitable Soil Type	Distance (miles) of potential habitat crossed				
		Cropland Pasture	Herbaceous Rangeland	Forested Wetland	Deciduous Forest	County Total
Pennington SD	Sandy, Erosive	0.08	0	0	0	0.08
	Prime Farmland	4.06	0.99	0	0	5.05
Custer SD	Sandy, Erosive	0	0	0	0	0
	Prime Farmland	2.06	5.00	0	0	7.06
Fall River SD	Sandy, Erosive	0.97	6.06	0.12	0	7.15
	Prime Farmland	7.96	13.63	0.73	0	22.32
Alternative D Total:		15.13	25.68	0.85	0	41.66

4.7.2.5.2 Operational Impacts

Operational impacts are similar to Alternatives B and C.

4.8 MINNESOTA DWARF TROUT LILY

4.8.1 Minnesota

Minnesota dwarf trout lily occurs in woodland habitats adjoining floodplains in Steele, Rice and Goodhue counties in Minnesota. Construction would occur in Steele County; however the area of proposed construction is approximately 15 miles south of where the lily is found east of Faribault, Minnesota. The MNHDB has no record of the lily occurring in the proposed project area. Suitable habitat does not occur in the proposed project area; therefore, no impacts to the Minnesota dwarf trout lily are expected.

4.8.2 South Dakota and Wyoming

This species does not occur in South Dakota or Wyoming; therefore, there would be no impacts.

4.9 HIGGIN'S EYE PEARLY MUSSEL

4.9.1 Minnesota

The MNHDB (1998) provided reports of mussel surveys conducted in the Mississippi River during 1990 (Burlington Northern Railroad bridge crossing) and 1995 (Lock and Dam 6 tailwaters) in Winona County; in the South Fork of the Zumbro River during 1988 in the vicinity of Rochester, Olmsted County; in the Straight River (tributary to the Cannon River) during 1987 in the vicinity of Owatonna, Steele County; and in the Minnesota River during 1989 in Brown, Nicollet and Blue Earth counties between New Ulm and Mankato. These mussel survey sites were within 1-2 miles of the existing railroad. While several mussel species that are listed as state endangered and threatened in Minnesota were found during those surveys, no Higgin's eye pearly mussels were found. If the species is present, sedimentation of inhabited waters could adversely affect it. Accidental release of petroleum products could also adversely affect the species. Given the known limits of the species' distribution and local survey efforts, it is unlikely to be present in the project area and vicinity. Therefore, the species is not expected to be impacted by this project.

4.9.2 South Dakota and Wyoming

This species does not occur in South Dakota and Wyoming; therefore, there would be no impacts.

4.10 WINGED MAPLELEAF MUSSEL

4.10.1 Minnesota

No impacts to the winged mapleleaf mussel are anticipated as a result of any part of this project since the only extant population of this species occurs below the St. Croix Falls dam on the St. Croix River, Wisconsin, 125 miles upstream from Winona, Minnesota.

4.10.2 South Dakota and Wyoming

This species does not occur in South Dakota and Wyoming; therefore, there would be no impacts.

4.11 KARNER BLUE BUTTERFLY

4.11.1 Minnesota

Portions of the existing rail line are within 1 mile of potential Karner blue habitat, mesic oak savannah (MNHDB 1998). However, none of the MNHDB site description records for mesic oak savannah or any other unique vegetation associations near the rail line include *Lupinus perennis*, or any other lupine species. No impacts to the Karner blue butterfly are anticipated as a result of any part of this project. Additionally, DM&E's existing line in Minnesota was surveyed by the MCBS in 1998. Wild lupine was not found at that time.

4.11.2 South Dakota and Wyoming

This species does not occur in South Dakota and Wyoming; therefore, there would be no impacts.

4.12 UTE LADIES'-TRESSES ORCHID

4.12.1 Minnesota

This species does not occur in Minnesota; therefore, there would be no impacts.

4.12.2 South Dakota and Wyoming

4.12.2.1 Alternative B (Proposed Action)

Two sites along Alternative B were identified during surveys in 1998 that have been determined potential habitat for Ute ladies'-tresses; one site in Wyoming (Lodgepole Creek) and one site in South Dakota (Dry Creek). One other site in South Dakota (Plum Creek) and three in Wyoming (East Fork Coal Creek, Dry Creek, and Caballo Creek) could not be evaluated because access was denied. In Wyoming, Alternative B would cross a total of 0.12 mile (approximately 3 acres of the ROW) of wet meadows, palustrine emergent wetland temporarily and seasonally flooded, that could be potential habitat for the orchid. The route in South Dakota would cross 0.78 mile (approximately 18 acres of the ROW) of the same wetland type.

4.12.2.1.1 Construction Impacts

Direct impacts to this species would most likely occur during construction if machinery and surface disturbances obliterated local populations. Additionally, Ute ladies'-tresses orchid could be impacted with the introduction of noxious weeds or exotics resulting from revegetation, borrow material and/or railroad ties.

4.12.2.1.2 Operational Impacts

Direct impacts could occur from maintenance of DM&E's rights-of-way if herbicide spraying is required or if noxious weeds are introduced.

4.12.3.1 Alternative C (Modified Proposed Action)

Four sites along Alternative C were identified during surveys in 1998 that have been determined potential habitat for Ute ladies'-tresses; two sites in Wyoming (Lodgepole Creek and School Creek) and two sites in South Dakota (Hay Canyon South and Dry Creek). Two other sites in South Dakota (French Creek and Plum Creek) and three in Wyoming (East Fork Coal Creek, Belle Fourche River, and Caballo Creek)

could not be evaluated because access to the proposed right-of-way was denied. In Wyoming, Alternative C would cross a total of 0.16 mile (approximately 4 acres of the ROW) of wet meadows, palustrine emergent wetland temporarily and seasonally flooded, that could be potential habitat for the orchid. The route in South Dakota would cross 0.70 mile (approximately 17 acres of the ROW) of the same wetland type.

4.12.3.1.1 Construction Impacts

Construction of this alternative would have similar impacts as Alternative B. Machinery and surface disturbances during construction could kill existing populations. Additional impacts include the introduction of noxious weeds from revegetation and borrow material. Individuals of Ute ladies'-tresses inhabiting the construction right-of-way would be eliminated, both for the short- and long-term.

4.12.3.1.2 Operational Impacts

Operational impacts would be similar to Alternative B.

4.12.4.1 Alternative C with the Phiney Flat Variation

Two sites along Alternative C with the Phiney Flat Route Variation in South Dakota were identified during surveys in 1998 that have been determined potential habitat for Ute ladies'-tresses. Those sites are Hay Canyon South and Dry Creek. In South Dakota, the Phiney Flat Route Variation would cross a total of 0.8 mile (approximately 19 acres of ROW) of wet meadows, palustrine emergent wetland temporarily and seasonally flooded, that could be potential habitat for the orchid. The route in Wyoming would cross 0.16 mile (approximately 4 acres of ROW) of the same wetland type; the same amount affected as Alternative C, above.

4.12.4.1.1 Construction Impacts

Construction of this alternative would have similar impacts as Alternatives B and C.

4.12.4.1.2 Operational Impacts

Operational impacts would be similar to Alternatives B and C.

4.12.5.1 Alternative C with the W G Flat Variation

One site along Alternative C with the W G Flat Variation in South Dakota was identified during surveys in 1998 that has been determined as potential habitat for Ute ladies'-tresses. That site is at Dry Creek. In South Dakota, the W G Flat Variation would cross a total of 0.57 mile (approximately 14 acres of ROW) of wet meadows, palustrine emergent wetland temporarily and seasonally flooded, that could be potential habitat for the orchid. This alternative in Wyoming would cross 0.16 mile (approximately 4 acres of ROW) of that wetland type; the same amount affected as Alternative C, above.

4.12.5.1.1 Construction Impacts

Construction of this alternative would have similar impacts as Alternatives B and C.

4.12.5.1.2 Operational Impacts

Operational impacts would be similar to Alternatives B and C.

4.12.6.1 Alternative D (Existing Transportation Corridors)

One site along Alternative D was identified during surveys in 1998 that has been determined potential habitat for Ute ladies'-tresses. That site is in South Dakota where Alternative D and Alternative C coincide and cross Dry Creek. One other site in South Dakota (Plum Creek) and three in Wyoming (East Fork Coal Creek, Belle Fourche River, and Caballo Creek) could not be evaluated because access to the proposed right-of-way was denied. In South Dakota, Alternative D would cross a total of 0.27 mile (approximately 6.5 acres of ROW) of wet meadows, palustrine emergent wetland temporarily and

seasonally flooded, that could be potential habitat for the orchid. The route in Wyoming would cross 0.81 mile (approximately 20 acres of ROW) of that wetland type, more than affected by Alternative B and Alternative C, above. In both states, most wet meadows impacted by the alternative are on private lands.

4.12.6.1.1 Construction Impacts

Construction of this alternative would have similar impacts as Alternatives B and C. However, there are fewer potential habitat locations for Ute ladies'-tresses along Alternative D. Direct impacts to this species would most likely occur during construction if machinery and surface disturbances obliterated local populations. Additionally Ute ladies'-tresses orchid could be impacted with the introduction of noxious weeds or exotics resulting from revegetation, borrow material and/or railroad ties.

4.12.6.1.2 Operational Impacts

Operational impacts would be similar to Alternatives B and C.

4.13 PRAIRIE BUSH-CLOVER

4.13.1 Minnesota

4.13.1.1 Construction Impacts

A 1998 inventory conducted by the MCBS did not record the presence of prairie bush-clover along DM&E's existing right-of-way. However, the plant has been recorded within one mile of the proposed project area in Brown and Dodge counties (MNHDB 1998). Direct impacts to this species would most likely occur during construction if machinery and surface disturbances destroyed local populations, but only if the plant is present within construction rights-of-way. Table 4-12 is a summary of data collected by the Minnesota County Biological Survey along DM&E's existing right-of-way that could be potential habitat for the species. If the plant was found along the right-of-way it could be impacted with the introduction of noxious weeds or exotics resulting from revegetation, borrow material and/or railroad ties.

4.13.1.2 Operational Impacts

Operational impacts include the spraying of herbicides and grass fires along DM&E's rights-of-way. However, fire appears to promote the regeneration of native plants including prairie bush-clover.

Table 4-12 Minnesota County Biological Survey Data on Native Prairies within DM&E's Right-of-Way						
County	Total miles of Prairie in ROW	Number of Prairie Remnants	Number of Prairie Types and Range of Prairie Quality ¹ as Potential Habitat			
			Dry Prairies	Prairie Quality Range	Mesic Prairies	Prairie Quality Range
Olmsted	3.2	10	0	--	10	8-Fair 1-Good 1-Very Good
Dodge	0.9	4	0	--	4	4-Fair
Steele	1.7	3	0	--	3	2-Fair 1-Good
Waseca	3.2	16	0	--	14	4-Fair 10-Good
Blue Earth	0.9	3	1	1-Good	0	--
Brown	8.8	8	0	--	8	2-Fair 3-Good 3-Very Good
Redwood	3.0	5	0	--	5	2-Fair 2-Good 1-Very Good

Table 4-12						
Minnesota County Biological Survey Data on Native Prairies within DM&E's Right-of-Way						
County	Total miles of Prairie in ROW	Number of Prairie Remnants	Number of Prairie Types and Range of Prairie Quality ¹ as Potential Habitat			
			Dry Prairies	Prairie Quality Range	Mesic Prairies	Prairie Quality Range
Lyon	4.3	10	0	--	10	4-Fair 4-Good 2-Very Good
Lincoln	5.5	6	1	1-Good	3	3-Fair
¹ – Prairie Quality Rating Guidelines (MCBS 1999) Very Good: > 70% native grass cover, > 15 native wildflower species, < 10% native trees and shrubs, < 10% disturbance Indicators Good: > 55% native grass cover, > 10 native wildflower species, < 25% native trees and shrubs, < 25% disturbance Indicators Fair: > 25% native grass cover, > 6 native wildflower species, < 50% native trees and shrubs, < 50 % disturbance Indicators						

4.13.2 South Dakota and Wyoming

This species does not occur in South Dakota and Wyoming; therefore, there would be no impacts.

4.14 LEEDY'S ROSEROOT

4.14.1 Minnesota

The plant is restricted to limestone cliffs that lead to underground caves. There is no documentation of the plant occurring in the proposed project area; therefore no impacts to the plant or its habitat are anticipated.

4.14.2 South Dakota and Wyoming

This species does not occur in South Dakota and Wyoming; therefore, there would be no impacts.

4.15 WESTERN PRAIRIE FRINGED ORCHID

4.15.1 Minnesota

The orchid was previously recorded from Dodge and Nicollet counties in Minnesota, although no records of the western prairie fringed orchid have been reported within 1.0 mile of the existing DM&E railroad (MNHDB 1998). Additionally, a survey by the MCBS in 1998 along the existing DM&E rail line did not result in occurrences of the orchid. However, MCBS did delineate remnants of wet prairies, potential habitat for the western prairie fringed orchid, within DM&E's existing right-of-way. Two remnant wet prairies were identified in each of the counties of Lincoln, Blue Earth, and Waseca. While there may be potential habitats, in addition to native wet prairies, within the existing right-of-way (the orchid also occurs in borrow areas, abandoned fields, and along roadways), the availability of potential habitat suitable for western prairie fringed orchids appears limited. (The species has not been recorded in the proposed project area). No impacts to the plant or its habitat are anticipated.

4.15.2 South Dakota and Wyoming

This species does not occur in South Dakota and Wyoming; therefore, there would be no impacts.

4.16 BALD EAGLE

4.16.1 Minnesota

Bald eagles may winter along the Minnesota River within the rebuild portion of the proposed project area. Although most breeding records for bald eagles are distributed in the northeastern and northcentral portion of Minnesota, 2 nests have been documented in the project vicinity. One nest was recorded from the Minnesota River floodplain, 1.7 miles from DM&E's existing rail line, north of Mankato, Blue Earth

County, and the other on the Mississippi River floodplain 1.1 miles from the exiting rail line near Winona, Minnesota (MNHDB 1998).

4.16.1.1 Construction Impacts

Since bald eagles tend to avoid human activities during all times of the year, construction activities can temporarily displace eagles during their migration, wintering, and nesting periods. Typically, the recommended spatial buffers for endangered and threatened species are 1.0 miles. Spatial buffer zones recommended for raptor nesting protection are also encouraged for activities occurring proximal to raptor winter concentration areas from November through March. The USFWS recommends maintaining a spatial buffer equal to one-half of the recommended buffers for nests unless site-specific topography or vegetation allow for smaller buffers. Daily activities, which must occur within, recommended spatial buffers at winter night roost sites should be scheduled after 0900 hours, after which most raptors have vacated their roost. Likewise, daily activities should terminate at least one hour prior to official sunset to allow birds an opportunity to return to the roost site undisturbed.

Approximately, 28 miles of the existing railroad passes within 0.5-mile of potential bald eagle winter habitats in Minnesota (Table 4-13). Short-term construction disturbances, such as noise and increased human activity, could affect wintering bald eagles. Approximately 31 miles of existing rail line would be within 1.0 mile of potential habitats in Minnesota (Table 4-13). Potential bald eagle nesting habitats also occur within both 0.5 and 1.0 mile of the existing rail line where there are cottonwood riparian woodlands. Though the only known bald eagles nests in the project vicinity are more than 1.0 mile from the existing railroad, more may nest closer in the future as nesting populations expand their range. Future nests would not likely be impacted by the project as nesting pairs would be exposed to train activity on a regular basis, including prior to nesting. They would be expected to be tolerant of train disturbance during subsequent nesting.

Disturbances to eagles when they are migrating would probably not displace them from habitats that are key to their survival since during this time they are generally moving between habitats.

Table 4-13		
Potential Bald Eagle Winter Habitats Along Existing Railroad ROW.		
Location	ROW within 0.5 mile of Potential Habitat (miles)	ROW within 1.0 mile of Potential Habitat (miles)
Minnesota River – Blue Earth County	20.2	22.1
Minnesota River – Brown County	7.4	9.3
Missouri River – Hughes County	14.0	17.1
Missouri River – Stanley County	2.5	3.1
Bad River – Stanley County	14.5	16.1
Existing Railroad Total:	58.6	67.7

4.16.1.2 Operational Impacts

Bald eagles may be displaced from feeding sites, perch sites, and/or nocturnal communal winter roosts and nest sites due to noise and human activity along the right-of-way during operation of the train. Eagle mortalities could occur if bald eagles were drawn to the rail line to feed upon carrion left on the tracks.

4.16.2 South Dakota and Wyoming

Approximately, 31 miles of the existing railroad passes within 0.5-mile of potential bald eagle winter habitats in South Dakota. Short-term construction disturbances, such as noise and increased human activity, could affect wintering bald eagles. Approximately 36 miles of existing rail line would be within 1.0 mile of potential habitats in Minnesota.

4.16.2.1 Alternative B (Proposed Action)

4.16.2.1.1 Construction Impacts

Potential impacts to wintering bald eagles would be from human activity associated with project construction, operation, or maintenance. Approximately 82 miles and 126 miles of Alternative B would be within 0.5 and 1.0 miles, respectively, of potential bald eagle wintering habitat. Construction of this alternative during winter within the TBNG and along the corridor of the Cheyenne River in South Dakota and its major tributaries in Wyoming (Black Thunder Creek, Little Thunder Creek and Antelope Creek) is likely to displace wintering bald eagles from perches and feeding areas or make those sites temporarily unsuitable. Sites within at least a 0.5-mile up to a 1-mile zone of the Cheyenne River and major tributaries that could be affected are provided in Table 4-14. No bald eagle nests occur within 1.0 mile of this alternative. Noise from blasting and the operation of heavy earthmoving equipment and other activities associated with construction and preparation of the rail bed could potentially disturb bald eagles. Some trees suitable as bald eagle winter roost sites or future nesting sites could be removed during construction. However, winter construction would generally be scattered throughout the project area and limited to the immediate area of culvert and bridge installations. This would limit the potential to disturb wintering eagles to those sites where construction was actually occurring. While some roost sites may be disturbed, others would not, providing areas for eagles to roost undisturbed.

Since wintering bald eagles in some areas feed on big game carrion, they sometimes suffer direct mortalities when struck by vehicles while feeding at roadsides. It is unlikely that slow moving construction vehicles would inadvertently kill eagles feeding on carcasses. However, personal vehicles driven to and from construction sites would increase traffic on local roads. Increased traffic could lead to increased big game road kills and increased risk of mortality to eagles feeding along the roadways.

4.16.2.1.2 Operational Impacts

Alternative B would be within 0.5 miles of potential bald eagle wintering habitat for approximately 82 miles in South Dakota and Wyoming (Table 4-14). Nearly 126 miles of the right-of-way is within 1.0 mile of potential wintering habitat. Disturbances to wintering bald eagles could occur along 82 to 126 miles of Alternative B during project operation because of train noise and increased human activity. If roosts do not provide sufficient cover or buffer from this disturbance they would be abandoned. As eagles are exposed to train activity throughout the PRB, they are expected to have some level of tolerance to trains. Therefore, only minor impacts to roosting eagles would be expected during train operations.

Potential nesting habitat for bald eagles occurs throughout the project area. Although no nests are currently known, future nesting could occur as eagles expand their range and increase in number. Future nests would not likely be impacted by the project as nesting pairs would be exposed to train activity on a regular basis, including prior to nesting. They would be expected to be tolerant of train disturbance during subsequent nesting.

Table 4-14 Potential Bald Eagle Wintering Habitats Along Alternative B Right-of-Way		
County State	ROW within 0.5 mile of Potential Habitat (miles)	ROW within 1.0 mile of Potential Habitat (miles)
Pennington SD	12.33	22.96
Custer SD	21.70	24.28
Fall River SD	17.23	28.32
Niobrara WY	4.29	7.08
Weston WY	14.17	24.90
Converse WY	6.43	9.52

Table 4-14		
Potential Bald Eagle Wintering Habitats Along Alternative B Right-of-Way		
County State	ROW within 0.5 mile of Potential Habitat (miles)	ROW within 1.0 mile of Potential Habitat (miles)
Campbell WY	5.76	8.90
Alternative B TOTAL:	81.91	125.96

Train operations would likely lead to mortality of big game, resulting in carcasses along the rail line. Trains could kill bald eagles gorging themselves on these carcasses so as not being able to fly off the tracks when a train approaches. Such mortalities have been recorded elsewhere in Wyoming where bald eagles feed on big game carcasses along highways and railroads (Lockwood 1999). Actual mortality is difficult to predict as it would depend on many factors such as location of carcasses in relation to the rail line, operating times of trains, availability of food in other areas, and the presence of eagles. Only incidental mortality would be anticipated. Future nests would not likely be impacted by the project as nesting pairs would be exposed to train activity on a regular basis, including prior to nesting. They would be expected to be tolerant of train disturbance during subsequent nesting.

4.16.3.1. Alternative C (Modified Proposed Action)

4.16.3.1.1 Construction Impacts

Over 58 miles of Alternative C passes within 0.5-miles of potential bald eagle winter habitats in each of the counties in South Dakota and Wyoming. This is less than the 82 miles of Alternative B that is estimated to be within 0.5-mile of potential winter habitats. If short-term construction related disturbances affected wintering bald eagles 1 mile away, almost 95 miles of Alternative C would be within that distance from potential habitats identified in Table 4-5, but less than the 126 miles of Alternative B right-of-way within the 1-mile zone.

Construction of this alternative would have similar impacts as Alternative B. Impacts to bald eagles include disturbance by construction activities that could displace them during wintering and nesting periods, mortality caused by vehicles driving to and from the construction site and loss of suitable roosting habitat if trees are removed for construction.

Construction during winter within TBNG and along the corridor of the Cheyenne River in South Dakota and its major tributaries in Wyoming (Black Thunder Creek, Little Thunder Creek and Antelope Creek) is likely to displace wintering bald eagles from perches and feeding areas or make those sites temporarily unsuitable. Estimates of potential bald eagle wintering habitats within 0.5-mile and 1-mile zone of the Cheyenne River and major tributaries that could be affected by Alternative C are provided in Table 4-14.

4.16.3.1.2 Operational Impacts

Mortalities resulting from bald eagles being struck by trains while they are feeding on carrion along the rail line could occur. Human activity during maintenance activities could also disturb roosting and nesting bald eagles.

Table 4-15		
Potential Bald Eagle Wintering Habitats Along Alternative C Right-of-Way		
County State	ROW within 0.5 mile of Potential Habitat (miles)	ROW within 1.0 mile of Potential Habitat (miles)
Pennington SD	14.12	22.82
Custer SD	0	2.01
Fall River SD	11.00	21.11
Niobrara WY	4.21	7.16
Weston WY	12.71	18.82
Converse WY	6.33	9.60

Table 4-15 Potential Bald Eagle Wintering Habitats Along Alternative C Right-of-Way		
County State	ROW within 0.5 mile of Potential Habitat (miles)	ROW within 1.0 mile of Potential Habitat (miles)
Campbell WY	10.03	13.02
Alternative C TOTAL:	58.40	94.54

4.16.4.1 Alternative C with the Phiney Flat Variation

4.16.4.1.1 Construction Impacts

Twenty-six miles of the Phiney Flat Variation passes within 0.5-mile of potential bald eagle winter habitats in affected counties in South Dakota, 1.0-mile more than Alternative C for the same counties. Approximately 51 miles of the Phiney Flat Variation would be within 1.0-mile of potential habitats in South Dakota (Table 4-16), nearly 6 miles more than Alternative C in South Dakota.

Types of impacts would be similar to Alternatives B and C, although more bald eagle habitat could be affected than by Alternative C.

Table 4-16 Potential Bald Eagle Wintering Habitats Along Alternative C with Phiney Flat Variation Right-of-Way		
County State	ROW within 0.5 mile of Potential Habitat (miles)	ROW within 1.0 mile of Potential Habitat (miles)
Pennington SD	14.13	23.53
Custer SD	0.88	5.94
Fall River SD	11.00	21.11
Alternative C with Phiney Flat Variation TOTAL:	26.01	50.58

4.16.4.1.2 Operational Impacts

Impacts would be similar to Alternatives B and C.

4.16.5.1 Alternative C with the W G Flat Variation

4.16.5.1 Construction Impacts

Nearly 26 miles of the W G Flat Variation passes within 0.5-mile of potential bald eagle winter habitats in the counties in South Dakota, the same as the Phiney Flat Variation and about 1 mile more than Alternative C where it passes through the same counties. If short-term construction related disturbances affected wintering bald eagles 1 mile away, over 48 miles of the W G Flat Variation would be within that distance from potential habitats (Table 4-17). This would be almost 2.5 miles less than the Phiney Flat Variation, but over 2 miles more than Alternative C in South Dakota. All the Alternative C routes would affect less potential bald eagle habitat in South Dakota than Alternative B.

Impacts would be similar to Alternatives B and C.

Table 4-17 Potential Bald Eagle Wintering Habitats Along Alternative C with W G Flat Variation Right-of-Way		
County State	ROW within 0.5 mile of Potential Habitat (miles)	ROW within 1.0 mile of Potential Habitat (miles)
Pennington SD	14.12	22.82
Custer SD	0	1.96

Table 4-17 Potential Bald Eagle Wintering Habitats Along Alternative C with W G Flat Variation Right-of-Way		
County State	ROW within 0.5 mile of Potential Habitat (miles)	ROW within 1.0 mile of Potential Habitat (miles)
Fall River SD	11.70	23.39
Alternative C with W G Flat Variation TOTAL:	25.82	48.17

4.16.4.2 Operational Impacts

Impacts would be similar to Alternatives B and C.

4.16.5 Alternative D (Existing Transportation Corridors)

4.16.5.1 Construction Impacts

Nearly 30 miles of Alternative D passes within 0.5-mile of potential bald eagle winter habitats in two counties in Wyoming and two in South Dakota. This is less than the 82 miles of Alternative B and 58 miles of Alternative C that are estimated to be within 0.5-mile of potential winter habitats. If short-term construction related disturbances affected wintering bald eagles 1 mile away, almost 46 miles of Alternative D would be within that distance from potential habitats identified in Table 4-18, less than the 126 miles of Alternative B and 95 miles of Alternative C rights-of-way within the 1-mile zone. Specifically in South Dakota, Alternative D would affect less potential habitats along the Cheyenne River than either the Phiney Flat or W G Flat alternatives.

Construction of this alternative would have similar impacts as Alternatives B and C; however, fewer miles of proposed construction would impact the Cheyenne River and its tributaries where bald eagles would likely be located. Bald eagles roosting or nesting in the proposed project area could be disturbed by human activity during construction. Additionally, personal vehicles driving to and from the construction sites could kill bald eagles feeding on carrion along the roads.

Construction during winter within TBNG and along the corridor of the Cheyenne River in South Dakota and its major tributaries in Wyoming (Black Thunder Creek, Little Thunder Creek and Antelope Creek) is likely to displace wintering bald eagles from perches and feeding areas or make those sites temporarily unsuitable within at least a 0.5-mile up to a 1-mile zone surrounding construction activities. Estimates of potential bald eagle wintering habitats within 0.5-mile and 1-mile zone of the Cheyenne River and major tributaries that could be affected by Alternative D are provided in Table 4-18.

4.16.5.2 Operational Impacts

Maintenance activities may disturb bald eagles along the rail line. Additionally, trains may kill bald eagles if the eagles frequent rail line rights-of-way to feed on carrion.

Disturbances to wintering bald eagles could thus occur along 30 to 46 miles of Alternative D during the short- and long-term if eagles are affected by noise associated with train traffic 0.5-mile to 1 mile away.

Table 4-18 Potential Bald Eagle Wintering Habitats Along Alternative D Right-of-Way		
County State	ROW within 0.5 mile of Potential Habitat (miles)	ROW within 1.0 mile of Potential Habitat (miles)
Pennington SD	7.85	9.36
Custer SD	0	0
Fall River SD	11.20	20.01
Niobrara SD	0	0
Weston SD	0	0

Table 4-18		
Potential Bald Eagle Wintering Habitats Along Alternative D Right-of-Way		
County State	ROW within 0.5 mile of Potential Habitat (miles)	ROW within 1.0 mile of Potential Habitat (miles)
Converse SD	6.33	9.60
Campbell SD	4.47	7.01
Alternative D TOTAL:	29.85	45.98

4.17 MOUNTAIN PLOVER

Mountain plover show high site fidelity to breeding territories between years and nest aggregation sites may be more important than the availability of suitable habitat. Therefore, the amount of mountain plover suitable habitat that may be disturbed during construction of this project could be overstated if these areas are not part of the species historic nesting sites.

4.17.1 Minnesota

This species does not occur in Minnesota; therefore, there would be no impacts.

4.17.2 South Dakota and Wyoming

4.17.2.1 Alternative B (Proposed Action)

4.17.2.1.1 Construction Impacts

Since mountain plovers nest on the ground, adult birds, eggs and young are susceptible to mortality by vehicles and construction equipment, especially along 2-track range roads and undeveloped areas along the alignment of Alternative B and within the project area. Noise disturbance could displace mountain plovers from nesting near the new construction. Mountain plovers are known to nest on short-grass prairie in association with prairie dog colonies. Table 3-7 provides estimates of the amount of prairie dog colonies potentially disturbed or lost due to Alternative B. Approximately 279 acres of potential nesting habitat would be converted to railroad right-of-way. Additional habitat outside the right-of-way may be unsuitable for nesting due to human activity and noise during construction.

4.17.2.1.2 Operational Impacts

Operation of Alternative B could result in disturbance to nesting plovers selecting to nest within or near the right-of-way. However, expected disturbance would be minimal as mountain plovers would experience regular train events prior to selecting to nest and would likely be somewhat acclimated to this. Human activity associated with maintenance activities would be less common and could disturb nesting birds, leading to nest abandonment. Nests in proximity to the rail line, including in the right-of-way and adjacent areas, may be more susceptible to predation from predators traveling the rail line in search of carrion that stumble upon the nest and take the opportunity for a quick meal.

4.17.3.1 Alternative C (Modified Proposed Action)

4.17.3.1.1 Construction Impacts

Construction of this alternative would have similar impacts as Alternative B. Mountain plovers or their nests may be lost from vehicles traveling to and from the construction site and operation of heavy equipment. Nests in adjacent areas may be abandoned because of disturbance. Table 3-7 provides estimates of the amount of prairie dog colonies potentially disturbed or lost due to Alternative C. Additional habitat outside the right-of-way may be unsuitable for nesting due to human activity and noise during construction. Approximately 424 acres of prairie dog colony nesting habitat would be converted to railroad right-of-way.

4.17.3.1.2 Operational Impacts

Once the proposed project is constructed there may be an increase in predators because of the presence of carrion along the rail line. Additionally, mammals and raptors may prey upon nesting mountain plovers.

4.17.4.1 Alternative C with the Phiney Flat Variation

Impacts would be similar to Alternatives B and C.

4.17.5.1 Alternative C with the W G Flat Variation

Impacts would be similar to Alternatives B and C.

4.17.6.1 Alternative D (Existing Transportation Corridors)**4.17.6.1.1 Construction Impacts**

Construction of this alternative would have similar impacts as Alternatives B and C. Noise during construction could displace mountain plovers from nesting in the area. Table 3-7 provides estimates of the amount of prairie dog colonies potentially disturbed or lost due to Alternative C. Approximately 150 acres of potential nesting habitat would be converted to railroad right-of-way. Additional habitat outside the right-of-way may be unsuitable for nesting due to human activity and noise during construction.

4.17.6.1.2 Operational Impacts

Predators drawn to carrion along the track could prey on mountain plovers and their young.

4.18 SWIFT FOX**4.18.1 Minnesota**

This species does not occur in Minnesota; therefore, there would be no impacts.

4.18.2 South Dakota and Wyoming**4.18.2.1 Alternative B (Proposed Action)****4.18.2.1.1 Construction Impacts**

Swift fox are probably found using all upland habitats in the vicinity of the proposed project in South Dakota and Wyoming. They are more at risk where the proposed project crosses prairie dog colonies (Refer to Table 3-7). Removal of vegetation from the project area may reduce prey species and potential swift fox habitat. This species is occasionally killed by vehicular traffic, which has been estimated as contributing 5 percent of annual swift fox mortality in one study, but most swift fox mortality is from coyotes (Rongstad et al. 1989). Swift fox dens could be destroyed by heavy equipment and the fox may be displaced due to construction activity and human presence.

4.18.2.1.2 Operational Impacts

Swift foxes will consume carrion (Samuel and Nelson 1982, Uresk and Sharps 1986, Scott-Brown et al. 1987) and so are vulnerable to being struck by trains if they feed on carcasses along the railroad. However, they will not approach carrion that is being utilized by coyotes (Rongstad et al 1989).

4.18.3.1 Alternative C (Modified Proposed Action)**4.18.3.1.1 Construction Impacts**

Construction of this alternative would have similar impacts as Alternative B. Impacts include a reduction in prey species, loss of swift fox habitat (Refer to Table 3-7) and mortalities from vehicular traffic.

4.18.3.1.2 Operational Impacts

Operational impacts for this alternative are similar to Alternative B.

4.18.4.1 Alternative C with the Phiney Flat Variation

Impacts would be similar to Alternatives B and C.

4.18.5.1 Alternative C with the W G Flat Variation

Impacts would be similar to Alternatives B and C.

4.18.6.1 Alternative D (Existing Transportation Corridors)

4.18.6.1.1 Construction Impacts

Impacts would be similar to Alternatives B and C. Swift fox habitat would be lost (Refer to Table 3-7) and the removal of vegetation may reduce prey species. Swift fox may be killed by vehicular traffic travelling to and from the proposed construction sites.

4.18.6.1.2 Operational Impacts

Impacts would be similar to Alternatives B and C. Swift fox could be struck by trains while feeding on carcasses along the railroad.

4.19 STURGEON CHUB

4.19.1 Minnesota

This species does not occur in Minnesota; therefore, there would be no impacts.

4.19.2 South Dakota and Wyoming

4.19.2.1 Alternative B (Proposed Action)

4.19.2.1.1 Construction Impacts

Changes in stream flow due to bank stabilization could impact downstream habitats as could accidental release of petroleum products.

Accidental releases of toxic (fuel, lubricants, oils) substances present during construction could lead to mortality of Sturgeon chubs if these substances enter the Cheyenne River. Generally, these materials would not be stored near drainages and vehicles would be serviced at designated maintenance areas. Only minimal amounts of these substances would be present at an individual construction site. As with sedimentation, impacts from accidental spills would be most likely if the spill occurred at a crossing of the Cheyenne River, one of its tributaries, or in proximity to the river (Table 4-19).

Water depletions from the Cheyenne River could impact the species during construction. Sturgeon chubs probably spawn in late spring to midsummer (Lee et al. 1980) and may depend on deep water with fast currents to allow eggs and larva to be carried downstream (USFWS 1993c). Since flows in the Cheyenne River are highly variable, dependent in part on water released from Angostura Reservoir, water withdrawals for project construction could exacerbate existing limiting flow regimes, particularly during drought conditions.

Table 4-19				
Alternative B Sites within 500 feet of the Cheyenne River or Tributary Streams				
County State	Cheyenne River		Perennial Tributary Streams	
	Number of Sites	Total Distance (miles)	Number of Sites	Total Distance (miles)
Pennington SD	15	0.80	26	1.96
Fall River SD	5	0.96	25	5.44
Custer SD	40	4.29	75	7.68
Weston WY	0	0	0	0
Niobrara WY	0	0	0	0
Converse WY	0	0	0	0
Campbell WY	0	0	6	1.21
Alternative B Total:	60	6.05	132	16.29

4.19.2.1.2 Operational Impacts

During operation, impacts could also result from increased sedimentation or accidental spills. Increased sedimentation could occur during maintenance of bridges or culverts. Spills from maintenance equipment

or derailments could also occur. However, the limited amount of material released from maintenance equipment would not likely be sufficient to affect Sturgeon chub. Derailments would be unlikely because of the implementation of standard inspection and maintenance procedures. Any impacts from a spill would likely be localized and short-term as the released material, if it even entered the water, would be quickly diluted to concentrations below toxic levels.

4.19.3.1 Alternative C (Modified Proposed Action)

4.19.3.1.1 Construction Impacts

Construction of this alternative would have similar impacts as Alternative B. Sturgeon chub are susceptible to increased sediment that could occur during construction. Additionally, accidental releases of diesel fuels and other petroleum products could occur during construction. However, DM&E would have a SPCC plan in place and would store toxic (fuels and oil) substances away from drainages.

Impacts would be most likely if potential discharge sites are within 500 feet of surface waters where there may be insufficient riparian vegetation to prevent flows from entering drainages.

Table 4-20 indicates the number of sites and/or distances at which this alternative would be within 500 feet of the Cheyenne River or tributary streams with perennial flows. There are 144 sites on the Cheyenne River and perennial tributary streams, combined, where Alternative C is within 500 feet of the drainages. More than 20 miles of Alternative C is within 500 feet of the Cheyenne River and tributaries, only 2 miles less than Alternative B. These sites are believed to be those most likely where sediments and/or accidental releases of toxic compounds could be discharged.

Table 4-20				
Alternative C Sites within 500 feet of the Cheyenne River or Tributary Streams				
County State	Cheyenne River		Perennial Tributary Streams	
	Number of Sites	Total Distance (miles)	Number of Sites	Total Distance (miles)
Pennington SD	35	3.95	44	4.88
Fall River SD	3	0.86	20	2.99
Custer SD	0	0	28	6.56
Weston WY	0	0	0	0
Niobrara WY	1	0.34	0	00
Converse WY	0	0	0	0.90
Campbell WY	0	0	12	
Alternative C Total:	40	5.15	104	15.33

4.19.3.1.2 Operational Impacts

Impacts would be similar to Alternative B and would include increased sedimentation during maintenance activities or accidental spills from maintenance equipment or during derailments.

4.19.4.1 Alternative C with the Phiney Flat Variation

4.19.4.1.1 Construction Impacts

Impacts would be similar to Alternatives B and C. Table 4-21 indicates the number of sites and/or distances at which this alternative would be within 500 feet of the Cheyenne River or tributary streams with perennial flow. There are 106 sites on the Cheyenne River and perennial tributary streams, combined, where the Phiney Flat Variation is within 500 feet of the drainages where impacts to aquatic resources could occur. This would be 80 sites less than Alternative B and 26 less than Alternative C in the same South Dakota counties.

Table 4-21 Alternative C with the Phiney Flat Variation Sites within 500 feet of the Cheyenne River or Tributary Streams				
County State	Cheyenne River		Perennial Tributary Streams	
	Number of Sites	Total Distance (miles)	Number of Sites	Total Distance
Pennington SD	36	3.95	48	5.01
Fall River SD	3	0.86	19	2.99
Custer SD	0	0	6	1.58
Phiney Flat Variation Total:	39	4.81	67	9.58

4.19.4.1.2 Operational Impacts

Impacts would be similar to Alternatives B and C.

4.19.5.1 Alternative C with the W G Flat Variation

4.19.5.1.1 Construction Impacts

Impacts would be similar to Alternatives B and C and would include. Table 4-22 lists the number of sites and/or distances at which this alternative would be within 500 feet of the Cheyenne River or tributary streams with perennial flow. There are 134 sites in these areas where the W G Flat Variation is within 500 feet of the drainages where impacts to aquatic resources could occur. This is 28 sites more than the Phiney Flat Variation, but 52 sites fewer than Alternative B and about the same number of sites as Alternative C in the same South Dakota counties.

Table 4-22 Alternative C with the W G Flat Alternative Sites within 500 feet of the Cheyenne River or Tributary Streams				
County State	Cheyenne River		Perennial Tributary Streams	
	Number of Sites	Total Distance (miles)	Number of Sites	Total Distance (miles)
Pennington SD	36	3.95	45	4.88
Fall River SD	4	0.86	21	2.99
Custer SD	0	0	28	6.56
Alternative C with the W G Flat Alternative Total:	40	5.15	94	15.33

4.19.5.1.2 Operational Impacts

Impacts would be similar to Alternatives B and C.

4.19.6.1 Alternative D (Existing Transportation Corridors)

4.19.6.1.1 Construction Impacts

Impacts would be similar to Alternatives B and C. Sturgeon chub appear susceptible to increased sedimentation that could occur during and following construction of the proposed project. Further, changes in stream flow due to bank stabilization structures could impact downstream habitats as could accidental release of petroleum products. Impacts would be most likely if potential discharge sites are within 500 feet of surface waters where there may be insufficient riparian vegetation to prevent flows from entering drainages. Table 4-23 indicates the number of sites and/or distances at which the Alternative D route would be within 500 feet of the Cheyenne River or tributary stream with perennial flows.

There are 68 sites on the Cheyenne River and perennial tributary streams, combined, where Alternative D is within 500 feet of the drainages, fewer than the 192 sites and 144 sites intersected by Alternative B and

Alternative C, respectively. Less than 14 miles of Alternative D is within 500 feet of the Cheyenne River and tributaries, 9 miles less than Alternative B and nearly 7 miles less than Alternative C. These sites are believed to be those most likely where sediments and/or accidental releases of toxic compounds could be discharged.

Table 4-23				
Alternative D Sites within 500 feet of the Cheyenne River or Tributary Streams				
County State	Cheyenne River		Perennial Tributary Streams	
	Number of Sites	Total Distance (miles)	Number of Sites	Total Distance (miles)
Pennington SD	3	1.95	30	3.25
Fall River SD	3	0.73	20	5.70
Custer SD	0	0	0	0
Weston WY	0	0	0	0
Niobrara WY	0	0	0	0
Converse WY	0	0	0	0
Campbell WY	0	0	0	1.65
Alternative D Total:	6	2.68	62	10.60

4.19.6.1.2 Operational Impacts

During operation, short- or long-term impacts could occur downstream if there were derailments which released diesel fuels or other petroleum products into the Cheyenne River hydrologic basin.

4.20 BLACK-TAILED PRAIRIE DOG

4.20.1 Minnesota

This species does not occur in Minnesota; therefore, there would be no impacts.

4.20.2 South Dakota and Wyoming

4.20.2.1 Alternative B (Proposed Action)

4.20.2.1.1 Construction Impacts

At least 11.5 miles (approximately 279 acres of the ROW) of Alternative B would pass through prairie dog colonies in South Dakota and Wyoming. Direct impacts to black-tailed prairie dogs are most likely to occur during the construction phase of the project if the animals occur in the right-of-way. These impacts include mortality from construction equipment and vehicles, loss of habitat, and recreational shooting.

4.20.2.1.2 Operational Impacts

Long-term impacts include fragmentation of black-tailed prairie dog colonies' habitat, increased mortality by train and vehicular traffic, increased predation and disease from predators traveling along the rail line, and increased recreational shooting from increased human activities.

4.20.2.2 Alternative C (Modified Proposed Action)

4.20.2.2.1 Construction Impacts

At least 17.5 miles (approximately 424 acres of the ROW) of Alternative C would pass through prairie dog colonies in South Dakota and Wyoming compared to at least 11.5 miles of Alternative B and 6.2 miles of Alternative D.

Construction of this alternative would have similar impacts as Alternative B. Prairie dogs may be killed during construction by vehicular and construction traffic.

4.20.2.2.2 Operational Impacts

Fragmentation of prairie dog colonies could impact the reintroduction of black-footed ferrets. Black-tailed prairie dog mortality could increase due to train traffic, increased predation and spread of disease by predators.

4.20.2.3 Alternative C with the Phiney Flat Variation

Impacts of this alternative would have similar impacts as Alternatives B and C.

4.20.2.4 Alternative C with the W G Flat Variation

Impacts of this alternative would have similar impacts as Alternatives B and C.

4.20.2.6 Alternative D (Existing Transportation Corridors)**4.20.2.6.1 Construction Impacts**

Construction of this alternative would have similar impacts as Alternative B and C.

At least 6.2 miles (approximately 150 acres of the ROW) of Alternative D would pass through prairie dog colonies in South Dakota and Wyoming compared to at least 11.5 miles of Alternative B and 17.5 miles of Alternative C. But since Alternative D is mostly within an existing railroad corridor, fewer prairie dog colonies would be affected, particularly if vegetation growth within the existing right-of-way has been minimized by maintenance.

4.20.2.6.2 Operational Impacts

Long-term impacts include increased mortality by train traffic and increased predation.